

**REMARKS****ENTRY OF AMENDMENT UNDER 37 C.F.R. §1.116**

Applicant(s) request(s) entry of this Rule 116 Response because:

- (a) it is believed that the amendments of claims 1, 11, 27, 30, 31, and 38 put this application into condition for allowance;
- (b) the amendments were not earlier presented because the Applicants believed in good faith that the cited prior art did not disclose the present invention as previously claimed;
- (c) the amendments of claims should not entail any further search by the Examiner since no new features are being added or no new issues are being raised; and
- (d) the amendments do not significantly alter the scope of the claims and place the application at least into a better form for purposes of appeal. No new features or new issues are being raised.

The Manual of Patent Examining Procedures sets forth in Section 714.12 that "any amendment that would place the case either in condition for allowance or in better form for appeal may be entered." Moreover, Section 714.13 sets forth that "the Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent Examining Procedures further articulates that the reason for any non-entry should be explained expressly in the Advisory Action.

**REJECTION UNDER 35 U.S.C. §112**

Claims 1, 3-8, and 27-33 are rejected under 35 U.S.C. §112, first paragraph.

It is respectfully submitted that the removal of impurities by the exhausting process is an on-going process, as shown by the following embodiment and as is apparent from other embodiments:

Cite from Specification	Explanation
Paragraph 61: "[0061] According to the present invention, a pressure <u>to press a sealant</u> (a seal-glass layer) <u>to be melted</u> during the sealing process is supplied by <u>generating a pressure difference</u> between the inside of the paired glass substrates and the outside thereof. That is, the pressure inside the	Paragraph 61 states that a pressure difference is created between the outside and inside of the glass substrates by <u>exhausting the discharge space</u> therebetween "to press a sealant to be melted," i.e., <u>before the sealant begins to melt</u> .

<p><u>discharge space is kept low by exhausting the discharge space so that the sealant is pressed by the pressure caused by the exhausting in a direction for the substrates to approach each other.</u>" (emphasis added)</p>	
<p>Paragraph 68: "[0068] As the sealant (seal-glass layer) 4 which has been prepared in a solidified state on the substrate <u>is melt and able to be adhesive</u> during temperature holding period T2, a gap between the sealant and the substrate vanishes and an <u>exhausting operation via the pipe lowers the pressure inside the discharge space 6 causes an external pressure in a direction to press the substrates 2 &amp; 3 toward each other</u> so that melted sealant 4 is pressed to be deformed so as to make the height of the discharge space 6 the predetermined gap defined by the separator walls." (emphasis added)</p>	<p>Paragraph 68 states that a temperature is increased, melting the sealant and as the <u>exhausting operation continues</u>, external pressure presses the substrates closes together.</p>
<p>Paragraph 69: "[0069] When the gap between the paired glass substrates 2 &amp; 3 becomes the predetermined value the temperature inside the furnace 8 is lowered to a temperature of the solidifying temperature of sealant 4 during a temperature lowering period T3, <u>during which as well the exhausting operation is still continuously kept on.</u>" (emphasis added)</p>	<p>Paragraph 69 states that when the substrates are a predetermined distance apart, the temperature is lowered during a temperature lowering period T3, during which the <u>exhausting operation continues</u>.</p>
<p>Paragraph 70: "[0070] Next, the temperature lowered during temperature</p>	<p>Paragraph 70 states that the lower temperature, wherein the sealant does not</p>

<p>lowering period T3 is held for a predetermined period called a temperature-holding period T4. This temperature is set relatively high but of such a level that the sealant does not melt. During temperature holding period T4 <u>as well the exhausting process is kept on.</u>" (emphasis added)</p>	<p>melt, is maintained for a predetermined period of time T4, during which time <u>the exhausting process continues.</u></p>
<p>Paragraph 71: "[0071] <u>The exhausting operation during and after the temperature lowering period T3 is in order to remove the impurities</u> existing in discharge space 6; accordingly, there is provided temperature holding period T4 for keeping such the relatively high temperature that the removal of the impurity gas (hydrocarbon and so on) and moisture adsorbed in the dielectric layer or the protection layer can be accelerated at a high temperature." (emphasis added)</p>	<p>Paragraph 71 states that the exhausting operation, during and after the temperature lowering period T3, removes impurities in the discharge space.</p>
<p>Paragraph 72: "[0072] Temperature holding period T4 is determined according to a period by which the impurity gases are removed from the protection layer, etc. becomes so little as to give no effect onto the characteristics of the PDP. Next, the heater of the furnace is shut down so as to lower the temperature inside the furnace 8 for temperature lowering period T5, <u>during which the exhausting operation is kept on so as to remove further the impurities.</u>" (emphasis added)</p>	<p>Paragraph 72 states that after the temperature holding period T4, <u>the exhausting operation continues</u> for a temperature lowering period T5.</p>

<p>Paragraph 73: "[0073] When the impurities within discharge space 6 is removed and the temperature inside the furnace 8 is stabilized, which is called a room temperature period T6, <u>in stead of the exhausting operation a discharge gas is introduced into the discharge space</u> via pipe 5. The discharge gas is typically a mixture of neon gas and xenon gas, and can be introduced by opening the valve provided to pipe 9, and by shutting the exhaust valve and shutting down the exhaust pump." (emphasis added)</p>	<p>Paragraph 73 states that, <u>during the room temperature period T6, the exhausting operation is discontinued</u> and a discharge gas is introduced into the discharge space.</p>
--	---

For clarity, claim 1 has been amended to show the beginning of the exhausting operation and the discontinuation of the exhausting operation. Since paragraph 61 states: "According to the present invention, a pressure to press a sealant (a seal-glass layer) to be melted during the sealing process is supplied by generating a pressure difference between the inside of the paired glass substrates and the outside thereof" (emphasis added), it is respectfully submitted that it is clear that the exhausting operation begins before the sealant is melted, i.e., the reaction that the internal pressure is lowered relative to the external pressure before the melting of the sealant is not new matter. Also the features of claim 5 have been added to amended claim 1. Claim 5 has been cancelled without prejudice or disclaimer. Hence, in accordance with the Examiner's statement that claim 5 would be allowable if suitably rewritten (see paragraph 6, page 7 of office action), amended claim 1 is submitted to be in allowable form under 35 U.S.C. §112, first paragraph.

Since claims 3-8 depend from amended claim 1, claims 3-8 are submitted to be allowable for at least the reasons that amended claim 1 is submitted to be in allowable form under 35 U.S.C. §112, first paragraph.

It is respectfully submitted that, in accordance with the above discussion that the terminology of the exhausting the discharge place was unclear, said terminology has been amended to recite a beginning of the exhausting and a continuing of the exhausting.

Claims 27 has been amended to clarify exhausting as follows:

...

forming the sealant in a frame-shape and disposing same so as to extend between the pair of substrates;

beginning exhausting the discharge space through a conduction pipe, secured to at least one of the substrates and communicating with the discharge space;

heating and thereby melting the sealant while continuing exhausting the discharge space through the conduction pipe so as to lower the internal pressure within the discharge space before the sealant starts to melt, relative to an external pressure on the exterior of the substrates, such that the sealant, while melting, is compressed by the external pressure on the pair of substrates, sealing the pair of substrates.

Thus amended claim 27 is submitted to be in allowable form under 35 U.S.C. §112, first paragraph.

Claim 31 has been amended for clarity as follows: " A method of manufacturing a gas discharge panel having a pair of substrates sealed together with a sealant and defining a discharge space therebetween, comprising: forming the sealant along a periphery of at least one of the substrates, and stacking said substrates, one upon the other; lowering a pressure in the discharge space between the pair of substrates before the sealant starts to melt, relative to a pressure on exterior of the pair of substrates, by starting an exhausting operation to exhaust exhausting the discharge space, while heating and thereby melting the sealant; and sealing the pair of substrates.

Thus, amended claim 31 is submitted to be in allowable form under 35 U.S.C. §112, first paragraph.

Since claims 28-29 and 32-33 depend from amended claims 27 and 31, respectively, claims 28-29 and 32-33 are submitted to be in allowable form for at least the reasons that amended claims 27 and 31 are submitted to be in allowable form under 35 U.S.C. §112, first paragraph.

With respect to claim 30, the statement "the exhausting of the pressure to lower the internal pressure relative to the external pressure continues until the seal glass layer begins to melt," it is submitted to be clear from paragraph 68 that the exhausting operation continues until the seal glass layer begins to melt and the exhausting operation is maintained during heating. Claim 30 has been amended for clarity and is submitted to be in allowable form under 35 U.S.C. §112, first paragraph.

#### **REJECTION UNDER 35 U.S.C. §103(a)**

A. Claims 1, 3, 8, 12, 14, 27-33 and 35-38 are rejected under 35 U.S.C. §103(a) as being unpatentable over Seki et al. (JP 09-251839) in view of Dynka et al. (USPN 5,697,825) and JP 50

003570 (Okada).

Independent claim 1 has been amended to show more clearly that, for exhausting the discharge space, the gas in the discharge space is exhausted through the conduction pipe and the gas (air) in the furnace is introduced into the discharge space via a gap between an unmelted sealant and the front glass substrate (see fourth embodiment described in paragraph 127 of Patent Application Publication (US 2003 0073372 A1)).

Seki (JP 09-251839) discloses exhausting of the discharge space at an earlier time at a temperature of 300-400 degrees, wherein the exhausting of the discharge space is performed by exhausting the inside of the kiln (see paragraph 10 of Patent Application Publication (US 2003 0073372 A1)). In addition to the early exhausting of the discharge space, Seki also discloses (in paragraph 14 of Patent Application Publication (US 2003 0073372 A1)) that the discharge space is exhausted through the piping 12 after the sealing process or after completion of cooling:

"In addition, as shown in drawing, it connects with evacuation equipment (not shown) through the change-over valve V3 at the aforementioned piping 12, enclosure of a discharge gas is preceded, evacuation during the cooling time after the aforementioned sealing process or after the completion of cooling, and of the inside of a panel is carried out further".

Dynka and Okada also do not disclose the feature because Dynka does not disclose exhausting via a conduction pipe, and Okada discloses exhausting the discharge space via a pipe, but does not disclose exhausting before melting the sealant.

Thus amended claim 1 is submitted to be allowable under 35 U.S.C. §103(a) and to be patentable over Seki et al. (JP 09-251839) in view of Dynka et al. (USPN 5,697,825) and JP 50 003570 (Okada). Since claims 3, 4 and 6-8 depend from amended claim 1, claims 3, 4, and 6-8 are submitted to be allowable under 35 U.S.C. §103(a) for at least the reasons that amended claim 1 is submitted to be allowable.

With respect to claim 12, it is respectfully submitted that Seki, Dynka and Okada do not disclose both of "exhausting said discharge space via a leak clearance" and "lowering the pressure in the discharge space by exhausting same via a conduction pipe before melting seal substrates" are performed in a method of manufacturing a gas discharge panel. In particular, Seki and Dynka disclose exhausting the discharge space by exhausting the gas in the kiln (Seki, paragraph 10), or the heated reaction chamber 64 (Dynka, col. 7, lines 25-27) before solidifying the sealing agent or the compressible protrusion.

In addition to the difference in exhausting, Seki (paragraph 13) discloses that evacuation is

performed after the sealing process or the completion of cooling, not before solidifying the sealing agent. Okada discloses that the exhausting device 15 is operated during the melting of the frits, not before the frits are melted. Thus, independent claim 12, which recites that exhaustion takes place at a predetermined temperature, followed by raising the temperature within the furnace to melting temperature while lowering the pressure in the discharge space, is submitted to be allowable under 35 U.S.C. §103(a) and to be patentable over Seki et al. (JP 09-251839) in view of Dynka et al. (USPN 5,697,825) and JP 50 003570 (Okada). Since claim 14 depends from amended claim 12, claim 14 is submitted to be allowable under 35 U.S.C. §103(a) for at least the reasons that amended claim 12 is submitted to be allowable.

Independent claims 27, 31 and 38, which were rejected as being obvious under 35 CFR §103(a) in view of Seki and further in view of Dynka and JP 50 003570, have been amended to clarify the beginning and continuation of the exhausting of the discharge space. For example, amended claim 27 recites: "A method of manufacturing a plasma display panel comprising a pair of substrates having a discharge space therebetween and sealed with a sealant, comprising: forming the sealant in a frame-shape and disposing same so as to extend between the pair of substrates; beginning exhausting the discharge space through a conduction pipe, secured to at least one of the substrates and communicating with the discharge space; heating and thereby melting the sealant while continuing exhausting the discharge space through the conduction pipe so as to lower the internal pressure within the discharge space before the sealant starts to melt, relative to an external pressure on the exterior of the substrates, such that the sealant, while melting, is compressed by the external pressure on the pair of substrates, sealing the pair of substrates."

Seki et al. (JP 09-251839), Dynka et al. and JP 50 003570 (Okada), even if combined, do not teach or suggest the present invention as recited in amended independent claim 1, unamended claim 12, and amended claims 27, 31 and 38. In addition, there is no teaching or suggestion of combining Seki et al., Dynka et al. and JP 50 003570 (Okada). It is respectfully submitted that the courts have held that the Examiner may not suggest modifying references using the present invention as a template absent a suggestion of the desirability of the modification in the prior art. *In re Fitch*, 23 U.S.P.Q.2d 1780, Fed Cir. 1992. Something in the prior art as a whole must suggest the desirability, and thus, the obviousness, of making the combination. *Alco Standard Corp. v. Tennessee Valley Authority*, 808 F. 2d 1490, 1 U.S.P.Q. 2d 1337 (Fed. Cir. 1986). When a rejection depends on a combination of prior art references, there must be some teaching, suggestion or motivation to combine the references. *In re Geiger*, 815 F.2d 686, 688 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987).

Independent claim 30 has been amended for clarity as follows:

"...

forming a seal glass layer along a periphery of the other substrate, of a height greater than a height of said separator walls;

positioning the pair of substrates, in opposed relationship and separated by a discharge space of a predetermined interval therebetween, in a vacuum-heating furnace;

beginning exhausting the discharge space between the pair of opposed substrates until said seal glass layer begins melting via a conduction pipe to introduce gas ambient to the pair of the substrates so as to remove an impurity in the discharge space, to produce a low pressure therein relative to an exterior pressure on the substrates; and

heating said seal glass layer until said seal glass layer melts while maintaining the low pressure in the discharge space by said exhausting."

Thus, claim 30 is now submitted to be in allowable form under 35 U.S.C. §103(a) over Seki et al., Dynka et al. and JP 50 003570 (Okada).

As recited above, the exhausting process of the present invention is performed during a specific period of time to accomplish the exhaustion of the discharge space in a manner that facilitates the sealing of the seal glass layer.

Thus, amended independent claim 1, unamended claim 12, and amended claims 27, 30, 31 and 38, and claims 3, 8, 14, 28-29, 32-33, 35-37 which depend from claims 1, 12, 27, and 31, respectively, are respectfully submitted to be patentable under 35 U.S.C. §103(a) over Seki et al., Dynka et al. and JP 50 003570 (Okada).

**B.** Claims 4 and 11 are rejected under 35 U.S.C. §103(a) as being unpatentable over Seki et al., Dynka, and Okada as applied to claim 1 above and further in view of Murai et al. (USPN 5,754,003).

Independent claim 1 has been amended to allowable form (see above) and is submitted to be allowable under 35 U.S.C. §103(a) and to be patentable over Seki et al., Dynka, and Okada and further in view of Murai et al. (USPN 5,754,003). Since claim 4 depends from amended claim 1, claim 4 is submitted to be allowable under 35 U.S.C. §103(a) for at least the reasons that amended claim 1 is submitted to be allowable.

Independent claim 11 has been amended for clarity (see above) and is submitted to be allowable under 35 U.S.C. §103(a) and to be patentable over Seki et al., Dynka, and Okada as applied to claim 1 above and further in view of Murai et al. (USPN 5,754,003) for at least the reasons that amended claim 1 is submitted to be allowable.

**C.** Claims 6, 15, 17, 18, 20 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Seki et al., Dynka, and Okada as applied to claim 1 above or over Seki et al., Dynka, Okada and Murai et al. as applied to claim 4, further in view of Itoh et al. (USPN 6,039,620) and further in view of Murai et al. (USPN 5,754,003).

Independent claim 1 has been amended to allowable form (see above) and is submitted to be allowable under 35 U.S.C. §103(a) and to be patentable over Seki et al., Dynka, and Okada or over Seki et al., Dynka, Okada and Murai et al., further in view of Itoh et al. (USPN 6,039,620) and further in view of Murai et al. (USPN 5,754,003). Since claim 6 depends from amended claim 1, claim 6 is submitted to be allowable under 35 U.S.C. §103(a) for at least the reasons that amended claim 1 is submitted to be allowable.

Claim 15 recites: "A method of manufacturing a gas discharge panel comprising a pair of substrates defining a discharge space therebetween and having a plurality of separator walls on at least one of the pair of substrates, comprising: **forming a sealant** in the shape of a frame on one of the pair of substrates; **stacking the one substrate onto the other substrate**; **arranging a formed-glass-frit** in a vicinity of and aligned with a through hole in one of the substrates; **heating the pair of substrates** so as to raise a temperature of the pair of substrates and **exhausting gas from**, and **lowering a pressure in, a space surrounding the pair of the substrates** so as to remove any impurities in the discharge space between the substrates; **melting the sealant**; forming said discharge space to a height determined by a height of the separator walls by deforming the sealant via exhausting the discharge space through the through hole; **cooling the pair of the substrates so as to solidify the sealant**; **filling the discharge space with a discharge gas** introduced through the through hole in the panel; and **sealing the through hole** after filling the discharge space with the discharge gas" (emphasis added). It is respectfully submitted that claim 15, unamended, clearly recites that exhausting is started before melting the sealant, cooling the substrates to solidify the sealant and then filling the discharge space with a discharge gas. Thus, it is respectfully submitted that claim 15 is in form for allowance over the cited art.

Unamended independent claim 15 is submitted to be in allowable form for the reasons recited above for claim 1 and to be allowable under 35 U.S.C. §103(a) and to be patentable over Seki et al., Dynka, and Okada as applied to claim 1 above or over Seki et al., Dynka, Okada and Murai et al. as applied to claim 4, further in view of Itoh et al. (USPN 6,039,620) and further in view of Murai et al. (USPN 5,754,003). Since claims 17, 18, 20 and 24 depend from claim 15, claims 17, 18, 20 and 24 are submitted to be allowable under 35 U.S.C. §103(a) for at least the reasons that amended claim 15 is submitted to be allowable.

## ALLOWABLE SUBJECT MATTER

The Examiner stated that claims 5, 7, 13, 16, 19, 21-23, 25 and 26 would be allowable if rewritten or amended to be made self-contained and to overcome the rejections under 35 U.S.C. §112, second paragraph.

Claim 1 has been amended to overcome the rejections under 35 U.S.C. §112, second paragraph. Since claims 5 and 7 depend from amended claim 1, claims 5 and 7 are also submitted to be allowable for at least the reasons that amended claim 1 is submitted to be allowable.

Claim 12, unamended, is submitted to be allowable (see above). Since claim 13 depends therefrom, claim 13 is also submitted to be allowable.

Claim 15, unamended, is submitted to be allowable (see above). Since claims 16, 21-23 and 25-26 depend directly or indirectly from claim 15, claims 16, 21-23 and 25-26 are also submitted to be allowable for at least the reasons that amended claim 15 is submitted to be allowable.

## CONCLUSION

Claims 1, 11, 27, 30, 31, and 38 have been amended. No new matter has been added.

Claims 1, 3-9 and 11-38 are pending.

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: April 13, 2004

By: Darleen J. Stockley  
Darleen J. Stockley  
Registration No. 84,257

1201 New York Ave, N.W., Suite 700  
Washington, D.C. 20005  
Telephone: (202) 434-1500  
Facsimile: (202) 434-1501